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ANNUAL REPORT  
OF  
THE DIRECTOR-GENERAL  
OF THE  
GEOLOGICAL SURVEY OF THE UNITED KINGDOM,  
THE MUSEUM OF PRACTICAL GEOLOGY,  
AND  
THE GOVERNMENT SCHOOL OF MINES AND OF  
SCIENCE APPLIED TO THE ARTS.



ANNUAL REPORT

THE DIRECTOR-GENERAL

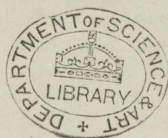
OF THE  
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PRINTED BY  
H. K. LEE



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ANNUAL REPORT of the DIRECTOR-GENERAL of the GEOLOGICAL SURVEY of the UNITED KINGDOM, the MUSEUM of PRACTICAL GEOLOGY, and the GOVERNMENT SCHOOL of MINES and of SCIENCE applied to the ARTS.

REPORT OF  
DIRECTOR-  
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OF THE  
GEOLOGICAL  
SURVEY,  
&c.

*Geological Survey of the United Kingdom.*

THE work accomplished in Great Britain during the past year by Professor Ramsay and the surveyors whose labours he superintends has exceeded that of any former year, and well justifies the recent appointment of the two additional officers, whose services were accorded at my request.

The annexed Table, prepared by Professor Ramsay, explains at one view the total amount and all the details of the work completed or in progress relating to the Geological maps of the English counties of Hants, Sussex, Kent, Surrey, Berks, Bucks, Oxford, Hertford, Bedford, Cambridge, Huntingdon, Nottingham, Stafford, Chester, and Lancaster, and the Scotch counties of Berwick, Haddington, Edinburgh, Linlithgow, and Fife. During the year, 2,605 square miles have been surveyed, and of areas previously completed 996 square miles have been published. Parts of both of these areas consist of coal measures.

The same table also shows that nine sheets of sections have been published; whilst upwards of 200 miles of country have been traversed in levelling and preparing other horizontal sections for publication.

The accompanying index maps (A. and B.) are so coloured as to indicate, 1st, the sheets previously issued; 2nd, those recently published; 3rd, the tracts completely surveyed and ready for publication; and 4th, the maps in progress.

The extent of ground surveyed is the more remarkable when it is considered, that, in compliance with directions which I gave, 30 whole sheets and 80 quarter-sheets of the coloured Geological maps, *i. e.*, all that have as yet been published have been *lettered*, so that in case of the colours fading, each formation will be readily distinguishable. Five of the surveyors, *viz.*, Mr. Aveline, Mr. Bristow, Mr. Drew, Mr. Bauerman, and Mr. Best, were employed in this labour, and were necessarily abstracted from those field surveys, which, notwithstanding such indispensable interference, have been extended over so large a surface.

The new horizontal explanatory sections, on the scale of six inches to the mile, are now illustrated by printed notices, in which Mr. Hull has described two sections made by himself across the North Staffordshire coal field, and the conterminous formations of Permian, Triassic, and Liassic ages. Professor Ramsay has himself published three sections across the Isle of Anglesea, accompanied by similar descriptions.

In Scotland progress has been made on the six-inch maps of the counties of Haddington, Edinburgh, and Linlithgow; Berwickshire and Fifeshire are also commenced. The work completed



during the year (see index map B.) comprises an area of 268 square miles, consisting chiefly of coal measures in a valuable mining district. The structure of these coal fields is exceedingly complicated by contortions and faults, and also by the intrusion and intercalation of numerous bosses and layers of igneous rocks, which render the geology of the country more difficult to unravel and represent on the maps than any of the English coal fields heretofore completed. The publication of these data will take place as soon as the work can be transferred to the one-inch maps now in preparation.

The sale of the maps and sections, though considerable, has been affected, as might be expected, by the recent monetary crisis; this is especially evident in the sales of the last half of the year.

In addition to his other duties, Professor Ramsay, with the permission of the Lord President of the Council, undertook an excursion to Canada, which will, I trust, prove valuable by enabling him to compare the deposits of our country with those of her great American colony. He has further prepared and published a catalogue of 2,107 rock specimens in the Museum, in which work he was assisted by Mr. Bristow and Mr. Bauerman, during those winter months when field surveying cannot be carried on effectively. The compendious volume which contains this catalogue will be found to offer not merely a dry list of specimens, but also full descriptions of the rocks, with explanations of the manner in which they were formed, being thus a text-book alike useful to the students of the School of Mines and to the visitors of the Museum.

Mr. J. Beete Jukes and his assistants in Ireland have surveyed in the past year 1,731 square miles in the counties of Kerry, Limerick, Cork, Tipperary, and Clare, registering their observations on the six-inch scale maps, which being preserved in the Central Office at Dublin, serve as *data* for the colouring and publication of the one-inch maps of Ireland.

The index map annexed (C.) is coloured to show the rate of progress and actual state of the six-inch data maps of the Survey.

The publication of the one-inch Geological maps is necessarily governed by the progress of the engraving of the maps by the Ordnance Survey and by the number of sheets supplied by that department of the War Office. The coloured index map annexed (D.) shows the past and present state of the one-inch publication maps.

Other sheets would have been published had not Mr. Wilson, an able senior geologist, been lost to the Survey by his transference to the Geological Survey of India; thus leaving some of the difficult and detailed work relating to the Kilkenny coal measures, in which he had been last employed, in an unfinished state. Notwithstanding this delay, twenty-eight quarter-sheets have been published.

Mr. Jukes further reports that specimens of fossils, to the number of 5,616, have been collected and registered in the Museum of Irish Industry during the year 1857. These and the present accumulations are now being brought into order and classification



through the labour of Mr. Baily, who was last year transferred from the office in London to that of Dublin.

The researches of the Geological Surveyors of Ireland having been applied in the field to the six-inch scale maps, which for many years were the sole published maps of the sister kingdom, a considerable mass of these data has consequently been accumulated, which it is now necessary to condense upon the one-inch or publication maps. Hence it will be necessary in the ensuing summer to survey less ground, and employ some of the field surveyors in preparing maps for the public, on which the geological structure of extensive tracts will be laid down from the materials registered on the data maps. The latter, though useful as official records or for consultation, are comparatively valueless until compared and reduced by the same surveyors who constructed them, and whilst the data are fresh in their minds.

Great progress has been made during the last year in the Natural History branch of the Survey. Much zealous labour and methodical arrangement were called for to carry out my wish, that the numerous accumulations of duplicate fossil organic remains collected during many years, and which were lying as incumbrances in our vaults, should be named and labelled, so as to be rendered useful for distribution among the various educational bodies in which geological science is cultivated. The labours of Professor Huxley, Mr. Salter, Mr. Baily, and Mr. Etheridge being completed, I have the satisfaction to announce that twenty-two duplicate collections have been transmitted to the following institutions:—

*List of Institutions to which Duplicate Sets of Fossils have been forwarded.*

1. Dublin - - The Museum of Irish Industry.
2. Edinburgh - - The Industrial Museum.
3. Calcutta - - The Museum of Practical Geology.
4. Montreal - - The Geological Survey of Canada.
5. New York - - The State Cabinet.
6. Hobart Town - - The Royal Society of Tasmania.
7. Melbourne - - The University.
8. Cape of Good Hope - South African Museum.
9. Belfast - - The Queen's College.
10. Cork - - The Queen's College.
11. Galway - - The Queen's College.
12. Aberdeen - - Marischal College.
13. Birmingham - - The Midland Institute.
14. Bristol - - The Philosophical and Scientific Institute.
15. Manchester - - The Natural History Society.
16. Dundee - - The Watt Institution.
17. Hull - - The Royal Institution.
18. Chatham - - The Royal Engineers' Establishment.
19. Cirencester - - The Royal Agricultural College.
20. Nottingham - - The Mechanics' Institution.
21. Woolwich - - The Royal Artillery Institution.
22. Warwick - - The Natural History Society.



These collections, containing in all 25,178 specimens named and labelled, have been, with one exception, distributed either in the United Kingdom or in the British Colonies: the single exception has been made in favour of the State of New York, in consequence of the intimate geological connexion between that portion of the United States, as illustrated by Mr. James Hall, and the British Colony of Canada, described by Sir William Logan.

This distribution of these recognized characteristic types of formations will, I trust, be considered of real value in diffusing a correct acquaintance with one of the great bases of geological science.

The report of Professor Huxley on the improved arrangement of the Palæontological Collection of the Museum is highly satisfactory, and the result is a proof of the perspicuity and energy applied by himself and the new assistant, Mr. Etheridge, whose duties have been performed in the most praiseworthy manner.

The recent cleansing and repainting of the interior of the building has enabled Professor Huxley to carry out his plan of re-arrangement, by which not only will every specimen be clearly displayed,—typical species being affixed to tablets of a distinct colour,—but much additional space will be gained for the interpolation of additional specimens. With this gain and the carrying out of the suggestion that the flat cases in the gallery should be doubled, it is hoped that no call for additional room will be made for a long time to come. It is indeed evident, that the present Museum, under proper arrangement of the materials, is sufficiently large to contain those characteristic organic remains, the knowledge of the relative position of which in the crust of the earth enables the geologist to identify the strata and so construct the Geological map of Britain, which is the fundamental object of the establishment.

This collection being thus defined and limited in its scope, in accordance with the sagacious views of my predecessor, my duty will be so to regulate the increase of specimens that a complete collection of all British fossil remains may be formed. The entire skeletons of the great fossil Vertebrata would occupy too much space in our Museum;—such large remains being, for obvious reasons, best exhibited in the British Museum, College of Surgeons, and other spacious buildings. It is desirable, however, that the Museum of the Geological Survey should contain some well chosen complete examples of the Sauroid and other Vertebrata, which are highly illustrative of the younger Palæozoic, Secondary, and Tertiary deposits, and, in the absence of which, some of the lectures could not be illustrated. In this sense two new specimens of the genera *Ichthyosaurus* and *Plesiosaurus* have been purchased; the latter affording to Professor Huxley materials for a new Decade.

Mr Etheridge is now reducing to order the great previous accumulation of Mesozoic fossils

Although the superintendence of the improvements and alterations in the cases of fossils has necessarily taken up much of the time of Professor Huxley, he has, in addition to the duties which he performs in common with the other Professors, advanced far in



the preparation of a memoir on the structure and affinities of Pterygotus, which will appear in a Decade, to be published under the joint superintendence of the Palæontologist and himself, as an introduction to the systematic description of the species, furnished by Mr. Salter. Professor Huxley has printed the introductory portion of the Explanatory Catalogue of the Palæontological collections on which he is engaged, but which cannot be brought out until the additional cases are provided. As Naturalist to the Survey, he has, at the request of the Board of Trade, drawn up and forwarded to the proper authorities a series of queries and directions for collecting the varieties of the herring, and he will shortly be occupied in examining and reporting upon these varieties when transmitted to London.

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The Hydrographer of the Admiralty having applied to me to aid in pointing out the best method of collecting and preserving objects of interest likely to be found in the soundings across the Atlantic, made by the officers of H.M.V. Cyclops, Professor Huxley obligingly volunteered to draw up instructions, which have been so well carried out as to have ensured the collection of many unique microscopic forms of life derived from great depths, the most important of which will be fully described and figured at the expense of the Admiralty. A preliminary report on the subject has been already presented to the Hydrographer.

The Palæontologist, Mr. Salter, has named in the last year 2,295 specimens,\* 200 of which have been transferred to the Museum and the remainder to the duplicate stores. This result is necessarily inferior to that of last year, inasmuch as he has been deprived of the assistance of Mr. Sharman, who was transferred to the business of the Museum on account of the great pressure of work in it. The loss by death of a young man, John Rhind, whom Mr. Salter had trained to become a useful and accurate junior assistant, has tended much to retard his work. An assistant of more advanced knowledge is therefore required, and I have suggested that such an appointment should be made.

Mr. Salter has now nearly completed a Decade in connexion with Professor Huxley, on the large Pterygoti of the Old Red Sandstone of Scotland, and another Decade on star fishes has been brought into a forward state.

He has, further, commenced the formation of catalogues of the Lower Palæozoic Rocks, one section of which is nearly completed, and he has as usual given demonstrations in Palæontology to the students of the school.

*Museum and Library.*—Lists of the donations to the Museum and Library are appended (III. & IV.) They equal in number and value those of any previous year, and show that the interest of the public in the institution does not decrease.

Although the number of visitors somewhat diminished, in consequence of the closing of the Museum during twelve weeks

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\* By a printer's mistake in last year's Report, 11,000 *species* instead of specimens were reported as catalogued.



for the necessary cleaning and painting of the interior, their numbers have amounted to 17,197.

The descriptive guide to the whole contents of the Museum, which was announced last year as in preparation, has been published, and affords general satisfaction. Six hundred and five copies have been sold, and the amount resulting from the sale has been paid into the Exchequer.

The explanatory catalogues of the rock specimens and fossils by Professors Ramsay and Huxley have before been referred to, as well as the great improvements which have taken place in the galleries by the re-classification and arrangement of the fossils.

*Mining Records.*—The objects of the Mining Record Office have been pursued by Mr. Robert Hunt, the keeper, with his accustomed activity and industry. In various journeys he has collected materials relative to our Mineral Statistics, the publication of which have already been so well appreciated by the Parliament and the public. In these researches, Mr. Hunt has met with the willing co-operation of many individuals connected with the production of coal and iron and of various metals, as well as with the support of mining proprietors and managers of railroads, all of whom gladly aid the Keeper of the Mining Records in furnishing materials for works which are highly estimated both at home and abroad.

Mr. Hunt has also been gathering together documents for preservation which register the state of underground mining operations. These records may often prove of great value, particularly when they indicate the state of a mine which, having been abandoned, is about to be re-opened. Let us hope that in a few years this collection of mining plans and sections will be rendered so complete, that mineral proprietors may depend on finding within our walls reliable information on subterranean workings. If a very small addition be made to the grant for this purpose, the object would be sooner attained—the more so if a subordinate clerk be admitted as a requisite addition in this branch of the institution.

In the preparation of these works, and in the formation of a catalogue descriptive of the collections of Mining Records in which he is engaged, Mr. Hunt has been well aided by his assistant Mr. Richard Meade.

#### SCHOOL OF MINES, &c.

The entries of the students to the School of Mines, which were last year reported as thirty-five, have during the present session increased to fifty-four. Of these, ten have paid the fees as matriculated students for the courses of lectures extending over two or three years, and one has been received as a free student from the Mining School at Truro. Of the remaining students,

34 have entered to the course on Chemistry.

6                   "                   "                   Physics.

4                   "                   "                   Mining.

5                   "                   "                   Metallurgy.



It has been explained before, that these returns being made up to the close of the year, do not include the total number of students' entries during the whole session, which is divided into two terms; the first commencing in October and the second in February. The lectures on Mineralogy, Geology, Natural History, and Applied Mechanics, as well as the lectures to the working men, commence after this return has been furnished, and consequently the entries for the present session, 1857-8, cannot be given.

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The following is the complete return of the students attending the lectures during the session 1856-7. The total number entered was fifty-four; of these eight were matriculated students, whose period of study extends over two years; one paid the fees as a perpetual student, to be entitled always to attend the lectures, and of the remaining forty-five,

3	entered to all the courses of lectures.
18	the course on Chemistry.
3	Physics.
3	Metallurgy.
7	Mining and Mineralogy.
8	Natural History.
7	Applied Mechanics.
8	Geology.

The following courses of lectures to the working men were delivered during the past session, and attracted the same numbers as usual; all the tickets (600) for each course having been applied for and issued within a few hours:—

Six upon Natural History	-	By Professor Huxley.
„ Geology	-	By Professor Ramsay.
„ Applied Mechanics	-	By Professor Willis.

The period of study for the matriculated students which was formerly limited to two years, has, during the present session, been extended to three years, at the option of the students. Experience has shewn that so many of the students come unprepared by any previous scientific instruction, that they were unable at once to derive full benefit from the lectures, and, by passing their examinations, to obtain the certificate within the limited period of two years. It is believed that this extension of the period of study will be of much advantage to the students.

Notwithstanding the total absence this year of officers of the Queen's and the Hon. East India Company's Service, who are admitted to the lectures on advantageous terms, it is gratifying to note the increase in the numbers of both matriculated and occasional students; it being evident, that as the School of Mines becomes more known, so will the students increase.

From the fees received during the session 1856-7, 57*l.* 13*s.* 5*d.* have been paid into the Exchequer.

*Chemical Laboratory.*—Dr. Hofmann's return of the number of students who have attended the laboratory of the school during the past year is very encouraging, and shews the steady progress which has been made in the affiliated College of Chemistry, whilst the lectures delivered in the new theatre of that building have



Dr. Percy commends his assistant, Mr. Richard Smith, who has assisted the students in the assaying of ores, &c., and in the preparation of metallurgical products.

It is gratifying to know that students from North and South America and Australia, as well as of our own country, have been receiving instruction in the Metallurgical Laboratory.

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Return of Students attending the Metallurgical Laboratory :—

	1856.	1857.
Spring session	9	7
Summer session	8	8
Winter session	7	6
	<hr/> 24	<hr/> 21

*Printed Works.*—The works published during the year have been as follows :—

British Organic Remains, Decade IX.; Memoir on the Geology of the Country round Cheltenham; Mineral Statistics for 1856; Catalogue of the Rock Specimens in the Museum; Descriptive Guide to the Contents of the Museum; Explanations of Horizontal Sections Nos. 40, 41, and 42.

The last Decade (IX.) on British Fossil Fishes affords a proof of the value of the skilful labours of Sir Philip de M. G. Egerton, who has added to this Decade an Appendix relating to the three Memoirs he has contributed, which, when united, form a valuable work on British Ichthyolites.

The Memoir by Mr. Hull to accompany the Geological map of the country around Cheltenham has fully realised the anticipations expressed in my last Report.

The rest of the above mentioned publications have been referred to when alluding to the duties performed by Professors Ramsay and Huxley and Mr. Hunt.

Allusion having been made to the loss which the Survey has recently sustained in the transference of an able senior Geologist from Ireland to the Geological Survey of India; and it having been mentioned in former Reports that other Surveyors have previously quitted the Irish Survey for the Indian and other Surveys, I take this occasion to point out once more the obstacles which such transferences occasion to the more rapid progress of our labours when either the Geologist in question has attained a precision of work, or when, his first lesson having been learnt, he is becoming really useful. The latter instance has just taken place by the removal of a young surveyor, Mr. Bauerman, lately on the English list, to the Surveying Expedition of the Rocky Mountains in North America. Having been desired to recommend a person qualified for this task, I rejoiced in the opportunity of naming some one who was competent to assist in this National Expedition. It is, indeed, a source of pride to reflect that our Geological Survey, in conjunction with the School of Mines, should be able to supply men well fitted to work out the mineral structure of the distant possessions of the Crown. At the same time, since the disparity



of payment existing between the home appointments and those given to persons who explore distant lands, frequently deprives the Geological Survey of able assistants, the public must not expect that the Geological maps of the British Islands can be so rapidly issued as if they were executed by a body of well trained men, who have been continuously employed in the same work.

Among the gentlemen who were engaged on the Geological Survey of the United Kingdom or were educated at the School of Mines, I may well cite, with pride, the names of Professor Oldham and several of his assistants in India, of Mr. Selwyn in Australia, of Mr. Wyley at the Cape of Good Hope, and of Mr. Wall in the West Indies. The last of these geologists has, in conjunction with his associate Mr. Sawkins, thrown important light on the structure of Trinidad, and particularly by discovering the existence of thick beds of coal, which though of Tertiary age, is of so good a quality as to render it, probably, of great economical importance for steam navigation and other purposes.

Lastly, in thus briefly alluding to the useful employment at home and abroad of persons reared in our establishment, it gives me pleasure to be able to state, that being called upon by the Earl of Clarendon, I have recommended Mr. Richard Thornton, who passed through the Government School of Mines with credit, to be the Mining Geologist of the expedition about to sail for Southern Africa under the guidance of Dr. Livingstone.

RODERICK I. MURCHISON,  
Director-General.





TABLE I.—GEOLOGICAL  
RETURN of WORK done during

One-inch Maps.	Six-inch maps.	Hor.Sec. Sheets.	Ver.Sec. Sheets.	Counties.	Formations.
Nos.	Nos.	Nos.	Nos.	ENGLAND.	
3	...	...	...	Kent . . .	Cretaceous and tertiary.
4	...	...	...	Ditto . . .	Ditto . . .
6	...	...	...	Kent and Surrey	Ditto . . .
7	...	...	...	Berks, Bucks, Oxon	Cretaceous and alluvium.
8	...	...	...	Kent, Surrey, Hants	Cretaceous and tertiary.
9	...	...	...	Sussex . . .	Cretaceous . . .
11	...	...	...	Sussex and Hants	Cretaceous and tertiary.
13	...	...	...	Bucks and Oxon .	Oolites, cretaceous, and alluvium .
34	...	...	...	Gloucester, Wilts, Berks, and Oxon	Lias, oolites, cretaceous, & tertiary
45 N.W.S.W. S.E.	...	...	...	Warwick, Oxon, and Bucks.	Lias, oolites, cretaceous.
46	...	...	...	Bucks, Beds, Herts, Camb.	Oolites, Purbeck, cretaceous.
47	...	...	...	Herts and Camb.	Cretaceous . . .
52 S.E.	...	...	...	Beds, Hunts, Cam.	Oolitic cretaceous
71 N.E.	...	...	...	Nottinghamshire .	Permian, and new red sandstone.
72 N.W.	...	...	...	Staffordshire .	{ Carboniferous, Permian, new red and lias.
73 N.E.	...	...	...	Ditto . . .	Ditto . . .
80	107 108 Lancas.	...	...	Cheshire and Lancashire.	New red marl and sandstone.
82 S.E.	...	...	...	Nottinghamshire .	Permian and new red sandstone.
89 S.W.S.E.	{ 85, 86, 92, 93, 94, 100 101. }	...	...	Lancashire . .	Carboniferous .
SCOTLAND.					
...	1 to 18	...	...	Haddingtonshire .	{ Silurian, old red sandstone, carboniferous.
...	{ 3, 5, 6, 7, 8, 11, 12, 13, 14, 17, 18, 19. }	...	...	Edinburghshire .	Ditto . . .
...	{ 1 to 12 18, 19, 20, 25, 26, 27. }	...	...	Linlithgowshire .	Carboniferous .
...	1 and 4	...	...	Fifeshire .	{ Old red sandstone, carboniferous.
...		...	...	Berwickshire .	Silurian, old red carboniferous.
Carried forward					

## SURVEY OF GREAT BRITAIN.

the Year ending December 1857.

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Area published, 1857.	Area surveyed, 1857.	Area inspected.	Horizontal Sections published.	Horizontal Sections levelled.	Vertical Sections published.	Vertical Sections engraving.
<i>Square miles.</i>	<i>Square miles.</i>	<i>Square miles.</i>	<i>Sheets.</i>	<i>Miles.</i>	<i>Sheets.</i>	<i>Sheets.</i>
...	114	8	...	...	...	...
...	20	80	...	...	...	...
...	24	...	...	...	...	...
...	24	...	...	...	...	...
...	126	...	...	...	...	...
...	71	20	...	...	...	...
...	300	100	...	...	...	...
...	66	...	...	...	...	...
672	...	...	...	...	...	...
...	140	...	...	...	...	...
...	590	30	...	...	...	...
...	12	...	...	...	...	...
...	30	...	...	...	...	...
...	168	168	...	...	...	...
} 156	...	...	...	...	...	...
168	...	...	...	...	...	...
...	404	...	...	...	...	...
...	168	...	...	...	...	...
...	80	...	...	...	...	...
} ...	12	237	...	...	...	...
...	52	96	...	...	...	...
...	130	60	...	...	...	...
} ...	56	...	...	...	...	...
...	18	18	...	...	...	...
996	2,605	817	...	...	...	...



## RETURN of WORK done during the Year

REPORT OF  
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One-inch Maps.	Six-inch Maps.	Hor. Sec. Sheets.	Ver. Sec. Sheets.	Counties.	Formations.
Nos.	Nos.	Nos.	Nos.	Brought forward . . .	
Horizontal Sections.					
54 N.W.N.E. 61 N.E. S.E. 62 N.E. S.E. & N.W. 55 N.E. 63 N.W.S.W. 72 N.W.S.W. 73, 74 N.E. & S.E.	...	...	...	Worcester, War- wick, Shropshire, Staffordshire, Cheshire, Flint- shire.	Coal measures, Permian, new red sandstone.
71 N.W. 72 N.W.N.E. 73 N.E.	...	41, 42	...	Cheshire, Stafford- shire, Derbyshire	Carboniferous
78	...	40	...	Anglesea . .	Carboniferous, per- mian.
Vertical Sections.					
10	...	...	...	Hants and Isle of Wight.	Cretaceous and ter- tiary.
16, 17	...	...	22	Dorsetshire.	Purbecks . .
63 N.W. S.W. 71 N.W. S.W. 62 N.E. 63 S.W. 61 N.E. 74 N.E. S.E.	...	...	19, 20	Derby & Leicester	Coal measures .
	...	...	21	Warwick . .	Ditto . .
	...	...	23	Shropshire . .	Ditto . .
	...	...	24	Shropshire & Den- bighshire.	Ditto . .

ending December 1857—continued.

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DIRECTOR-  
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Area published 1857.	Area surveyed.	Area inspected.	Horizontal Sections published.	Horizontal Sections levelled.	Vertical Sections published.	Vertical Sections engraving.
Square miles. 996	Square miles. 2,605	Square miles. 817	Sheets.	Miles.	Sheets.	Sheets.
...	...	...	...	...	...	...
...	...	...	...	212	...	...
...	...	...	2	...	...	...
...	...	...	1	...	...	...
...	...	...	...	...	...	1
...	...	...	...	...	1	...
...	...	...	...	...	2	...
...	...	...	...	...	1	...
...	...	...	...	...	1	...
...	...	...	...	...	1	...
996	2,605	817	3	212	6	1

AND. C. RAMSAY,

Local Director of the Geological Survey of Great Britain.



PLANS  
OBTAINED  
FOR MINING  
RECORD  
OFFICE,  
&c.

## II.

DOCUMENTS added to the COLLECTION in the MINING RECORD OFFICE during the year ending December 1857.

1. South Brada Mine, Isle of Man.
2. Plan of Alfred Consols.
3. Section of do.
4. Plan of Lewis Mine.
5. Section of do.
6. Plan of West Huel Seton.
7. Section of do.
8. Transverse section of do.
9. Huel Buller, old workings.
10. Plan of West Caradon Mine Sett.
11. do. underground workings in do.
12. Plan of South Tamar Mine.
13. Section of do.
14. do. Strata at Great Ormes Head.
15. Plan of Huel St. Andrew.
16. Section of do.
17. Plan of West Huel Frances.
18. Plan of Bamfylde Mine, Devon.
19. Longitudinal section of do.
20. Transverse section of do.
21. Plan of Mollan Mine
22. Longitudinal section of do. (old part).
23. Plan, 170 fathoms east of Old Mine, do.
24. Section do. do. do.
25. Plan of Botallack Mine.
26. Section of under-sea workings.
27. do. do.
28. Imperial and Royal Mines, Schemnitz.
29. Mining country of Pzzibram.
30. Plan of mining property of Shelve, Salop.
31. Mine setts in Shelve, do.
32. Plan of East Grit Mine, do.
33. Section of do. do.
34. do. the Bog Mine, do.
35. Section on engine lode, West Huel Frances.
36. do. on middle lode, do.
37. Transverse section on do.
38. Plan of Devon Burra Burra Mine.
39. Sections of do.
40. Plan of Huel, Crebor.
41. Section of do. Kelly's Shaft.
42. do. do. Bundle's Shaft.
43. Plan of Bedford United.
44. Section of do.
45. Plan of Huel Edward.
46. do. Fowey Consols (6 sheets).
47. Section on lode do.
48. Transverse section of do.
49. Plan of Par Consols (5 sheets).
50. do. West Fowey Consols.
51. Map of Mining district of St. Just.
52. Plan of Lundhill Colliery.
53. Section of Rosehill Colliery, South Staffordshire.
54. do. Wallbut's Colliery.
55. do. Bromley Lane do.
56. do. Dudley's do.
57. do. Ridgeacre do.
58. Sections of chief Mines in Salop, Staffordshire, &c.

59. Plan of Huel Friendship, Tavistock (8 sheets).
60. Transverse sections of do. (11 sheets).
61. Section of Huel Edward, Calstock.
62. Plan of Huel Anderton.
63. Section of Virtuous Lady Mine.
64. do. Huel Bedford.
65. Plan of Devon and Courtenay Consols.
66. Sections of do. do.
67. Longitudinal section of part of Huel Friendship.
68. Bassetts of coal in the Haunchwood district.
69. Old workings in Warwickshire coal-field.
70. Plan of East Huel Jane, Truro.
71. Section of do. do.
72. Plan of Huel Jane, do. do.
73. do. West Stray Park sett.
74. do. workings, do.
75. Section of West Stray Park.
76. do. do.
77. do. do.
78. Plan of Lime and Lead Works, Staunton Harrold.
79. Section of do. do.
80. do. Coal at Bagilt, Flintshire.
81. do. Bodellwydan Mine, do.
82. Plan of Milwr Mines, do.
83. Transverse section of Milwr, do.
84. General section of do. do.
85. Section of Milwr Mines. do.
86. do. Heward do. do.
87. do. Caea do. do.
88. Brandy Colliery, Denbighshire.
89. Plan of Esgarhir Mine, Cardiganshire.
90. Section of do. do.
91. Plan of Maes-y-Safn, completed to 1857, Flintshire.
92. Section of do. do.
93. Plan of Talargoch, Flintshire.
94. Section of do. do.
95. Plan of Holywell Level and Mine, do.
96. Section of Holway Mine, Holywell.
97. Afon Eitha Colliery workings on Nant coal.
98. do. workings on Yard coal.
99. do. workings on Wall and Bench coal.
100. Section of Strata at Afon Eitha Colliery.
101. do. Westminster Mines, Flintshire.
102. do. do. on another lode, do.
103. Transverse section of do. do.
104. Plan of Hendre Mine sett.
105. do. Hendre workings.
106. Section of Hendre Mine.
107. do. Mountain Limestone in the lead district of Swaledale.
108. Plan of Borington Consols, Devon.
109. Section of do. do.
110. Plan of Sortridge Consols, do.
111. Section of do. do.
112. Plan of Sortridge and Bedford, do.
113. do. Huckworthy Bridge, do.
114. do. East Huel Russell, do.
115. Section of do. do.
116. Plan of Herodsfoot, do.
117. Section of do. do.
118. Huel Surprise, do.
119. Plan of South Friendship and Huel Arm, Devon.
120. West Friendship, Devon.



PLANS  
OBTAINED  
FOR MINING  
RECORD  
OFFICE,  
&c.

121. Section of South Friendship, Devon.
122. do. East Buckland, do.
123. do. Huel Sir Masset Mine do.
124. do. Huel Robert, do.
125. do. Crowndale, do.
126. Plan of Loweswater Mine, Cumberland.
127. do. Ballyricky, Ireland.
128. do. Minerva Mines, Denbighshire.
129. Section of do. do.
130. do. lodes in Mold Mountain, Flintshire.
131. Plan of Goginan Mine, Cardiganshire.
132. Section of do. do.
133. Belann level section, Flintshire.
134. Section of Mining district, Isle of Man.
135. Plan of Belann's level, Flintshire.
136. Section of Garreg Boeth, do.
137. do. Penrhyn Dhu, Carnarvon.
138. Llynny Pandu, Flintshire.
139. Shafts in Mold Mines, do.
140. Map of do. do.
141. Rhyd Galed Colliery, plan, do.
142. do. Hollin coal workings, do.
143. do. lower beds, do.
144. Plan of Bog Mine, Flintshire.
145. Longitudinal section do. do.
146. Plan of Gwern-y-Mydd, do.
147. Section of do. do.
148. Plan of Fron-Fawnog, do.
149. Section of do. do.
150. Two sections of do. do.
151. Plan and section of Fawnog Flat, Flintshire.
152. Section of Pant-y-Mwyn Mine, do.
153. do. do. on another lode, do.
154. Plan of Pant-y-Mwyn do.
155. do. Pant-y-Buarth do.
156. Section of do. do.
157. Plan of Rhyd-y-Mwyn, do.
158. Section of do. do.
159. Plans and sections of Penrhyn Dhu.
160. Plan of Summerhouse Shaft, Rhyd-y-Mwyn.
161. do. Cathole Mine, Flintshire.
162. Section of do. do.

In addition to the above, the office is now regularly furnished with several price lists of metals, coal and iron circulars,—beyond the ticketing papers for sales of ores; notices of private sales are supplied, and various other important statistical documents, prospectuses, reports, &c.

ROBERT HUNT, Keeper of Mining Records.

22nd December 1857.



## III.

DONATIONS to the MUSEUM of PRACTICAL GEOLOGY, during the Year ending  
31st December 1857.

- ORMEROD, Mr. G. W.—Specimen of Schorl and Felspar, from near Chagford, Devon.
- THORBURN, Mr. W.—A specimen of coal of peculiar structure, termed crystallized.
- WANOSTROCHT, Mr. VINCENT.—A specimen of bituminous shale, from Kimberidge Bay.
- WRIGHT, Mr.—A specimen of Galena coated with Carbonate of Lead, Quartz, &c., from Leadhills.
- DUDGEON, Mr. PAT.—Four specimens of Pectolite, from the coast between Ballintrae and Girvan, Ayrshire; also a specimen of Plumbocalcite, from Leadhills.
- TENNENT, Sir J. EMERSON.—Three specimens of Emery-stone, from Naxos, Nicaria, and Turkey.
- DAUBURGHY, Major.—Specimens of stream tin ore, of brown iron ore, and native gold, from the neighbourhood of Ballarat, Australia.
- NIBLETT, J. B. THOMAS.—A specimen of consolidated beach, from Red Wharf Bay, Anglesea.
- WILLIAMS, The Rev. Canon.—A specimen of Brookite, from Tremadoc, North Wales.
- PINTO, PEREZ, and Co.—A fine specimen of Malachite, from the Bembe mines, district of San José de Encoge, East of Ambriz.
- DILLWYN, Mr. LEWIS, M.P.—Three dies executed for the late Sir Henry de la Beche, by Messrs. W. and L. C. Wyon, one obverse and two reverse.
- LIDDIARD, Mr.—A specimen of potter's clay, from Cranham.
- FIELD, Mr. OSGOOD.—A large specimen of crystallized Native Copper, from the Norwich Mine, Lake Superior.
- HUNT, Mr. THOMAS CAREW.—Specimens of rare minerals, from the Azores.
- PALLISER, Mrs.—A specimen of pottery of early Staffordshire manufacture.
- EVANS and ASKIN, Messrs.—A series of specimens illustrating the properties and applications of German silver.
- COOKWORTHY, Mr. W.—Twelve specimens of porcelain, of early English manufacture.
- BOLLAERT, Mr.—A large specimen of Borate of Lime, from Tarapaca, in Peru.
- STURGESS, Mr.—A series of specimens illustrative of Britannia metal and its applications.
- DOUGLAS, Major.—A specimen of Wootz steel, from Bengal.
- BRAGG, Mr. JOHN.—Four polished specimens of lapis lazuli, aventurine, stalactite, and hematite.
- ROGERS, Mr. E.—A specimen of Sparry iron ore, from the Brendon Hills, West Somerset.
- LATROBE, Mr. C. J.—Specimens of fine Berlin iron castings.
- WILSON, Professor GEORGE.—Three fragments of mural tiles, discovered in the Cistercian Nunnery at North Berwick.
- BELLASIS, Mr. W. F.—An interesting series of specimens illustrative of the method of figuring patterns on cornelians, including an early specimen found in the ruins of Brahminabad, in Sind.
- LEGGE, The Hon. A.C.—A portion of a polished pebble of cornelian, found in the parish of Patteshull, Staffordshire.
- KING, Mr. THOMAS D.—A rare specimen of Italian encaustic cornelian.
- THURLOW, The Hon. J.—A fine mass of hematite iron ore, from near Muirkirk.
- PASTORELLI, Messrs. and Co.—Specimens of aluminium wire, and of its application for self-registering maximum thermometers.
- MARK, Mr. E. W.—Two specimens illustrating the mode of occurrence of the emerald, from New Granada.
- WILLS, Mr. WILLIAM, (through Mr. Marks).—A collection of fossils from the neighbourhood of Bogota.



DONATIONS  
TO THE  
MUSEUM OF  
GEOLOGY,  
&c.

- BENSTED, Mr. W. H.—A cube of the Kentish rag building stone, from the Iguanodon Quarry, Maidstone.
- RANDLESON, Mr. W.—A large specimen of Titanium, from the Whitehaven Haematite Iron Company's Works, on Cleator Moor.
- MONTEIRO, Mr. J. J.—Two very fine crystals of Sulphate of Lime, from Shot-over Hill, near Oxford.
- VICTORIA, The Government of.—Specimens of auriferous gold quartz, weighing in all 37 lbs. 1 oz. A sectional model of the strata penetrated in the diggings, with clays, &c., illustrative of the sections; and specimens of metallic tin, with the black tin from which it is made.
- WOOD, Mr. C.—A specimen exhibiting the junction of granite with gneiss, from Cumberland.
- SLOANE, Mr.—A fine collection of specimens from Monte-Catini, illustrating the mode of occurrence of copper ore.
- TREVELYAN, Sir W. CALVERLEY.—Specimens of papery mountain leather in fissures of red marl, Seaton, Devonshire.
- ROWE, Captain RICHARD.—Very fine specimens of Blende and Galena, from the Laxey Mine, Isle of Man.
- MITCHELL, Mr. W.—Specimens of sandstones impregnated with copper and with argentiferous lead.
- HUNT, Mr. JAMES.—A fine specimen of "crystallized coal."
- MELDRUM, Mr. E.—Specimens of the Pirnie cannel coal, from a pit near Leven, Fifeshire.
- TWAMLEY, Mr. CHARLES.—A fine specimen of crystallized pig iron, from Staffordshire.
- TRENHAM REEKS, Curator.

## IV.

## DONATIONS to the LIBRARY.

- PHILLIPS, J. A.—A Geological Reconnaissance of Tennessee, by James M. Safford, State Geologist. 1 vol. 8vo. 1856, accompanied by a map.
- GEOLOGICAL SOCIETY, The Council of the.—Fifty-three volumes and pamphlets upon Geology, Mining, &c.
- HARTUNG, GEORGE. (through Sir C. Lyell).—Die geologischen Verhältnisse der Inseln Lanzarote und Fuertaventura. 1 vol. 4to. accompanied with maps and plates.
- HUNT, Mr. ROBERT, F.R.S.—A Manual of Photography. 8vo. Fifth edition, 1857.
- MAHMOUD, Major.—The Elements of the Science of Grammar and Turkish Grammar, by Edward Yates, B.A. 1 vol. Small 8vo, 1857.
- MOSCOU, Société Impériale des Naturalistes de.—Bulletins, 1855, No. 2, 4; et 1856, No. 1. Nouveaux Mémoires, Tom. X.
- GEOLOGICAL SOCIETY OF DUBLIN, The Council of.—Volumes 1 to 6 of the Journal of the Society, wanting part 1 of Vol. 1.
- SCHRENK, Herr A. W.—Reise durch die Tundren der Samoeden. Zweite Theil. 8vo. Dorpat, 1854.
- NORTH OF ENGLAND INSTITUTE OF MINING ENGINEERS, The Council of.—Volumes 1 to 4 of the Transactions of the Institute. 8vo. Half-bound. 1852, 1856.
- HALL, Mr. JAMES, of Albany.—Descriptions of new Species of Palæozoic Fossils. 1 vol. 8vo. Albany, 1857.
- AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY.—Volume 2 of the Bulletin of the Society. New York, 1857.
- ROYAL INSTITUTION, The Members of.—A new Class Catalogue of the Library of the Institution, by B. Vincent. 1 vol. thick 8vo. cloth. 1857.
- Notices of the Meetings of the Members. Part vii. 1857.

FORCHAMMER, Professor.—Oversigt over det Kgl. danske Videnskabernes Sel-  
skabs. 8vo. Kjöbenhavn.  
MANGHESTER, The Literary and Philosophical Society of.—The Works of John  
Dalton, D.C.L., &c., &c. 4 vols. 8vo. cloth. And Volume 14 of the  
Memoirs of the Society.

DONATIONS  
TO THE  
MUSEUM OF  
GEOLOGY,  
&c.

TRENHAM REEKS, Librarian.

## V.

RETURN of MAPS and SECTIONS of the Geological Survey of England supplied for  
sale to Messrs. Longman & Co., the publishers.

				From 1st April to 31st Dec. 1856.	From 1st Jan. to 31st Dec. 1857.	
Whole sheets	-	-	-	460	-	437 copies.
Quarter sheets	-	-	-	1,538	-	1,085 "
Horizontal sections	-	-	-	238	-	177 "
Vertical sections	-	-	-	144	-	193 "
Index of signs and colours	-	-	-	42	-	22 "
				<u>2,422</u>	<u>1,914</u>	

LONDON:

Printed by GEORGE A. HAY and WILLIAM STODOLSKY,  
Printers to the Queen's most Excellent Majesty,  
for Her Majesty's Stationery Office.



Continuation of the Catalogue of the Royal Society of London, 1841.  
 The following is a list of the works of the Royal Society of London, 1841.  
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Printed by GEORGE E. EYRE and WILLIAM SPOTTISWOODE,  
 Printers to the Queen's most Excellent Majesty.

Year	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	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# GEOLOGICAL SURVEY

Explanation.

The Plates in the Map  
Colored thus are

Published	to 31 <sup>st</sup> Dec <sup>r</sup> 1856.	to 31 <sup>st</sup> Dec <sup>r</sup> 1857.
D <sup>o</sup> thus	Surveyed Complete.	In Progress

GEOLOGICAL SURVEY

{	Number of Plates Published	494
	D <sup>o</sup> Counties Complete	19
	D <sup>o</sup> D <sup>o</sup> in Part	17

## INDEX MAP (A)

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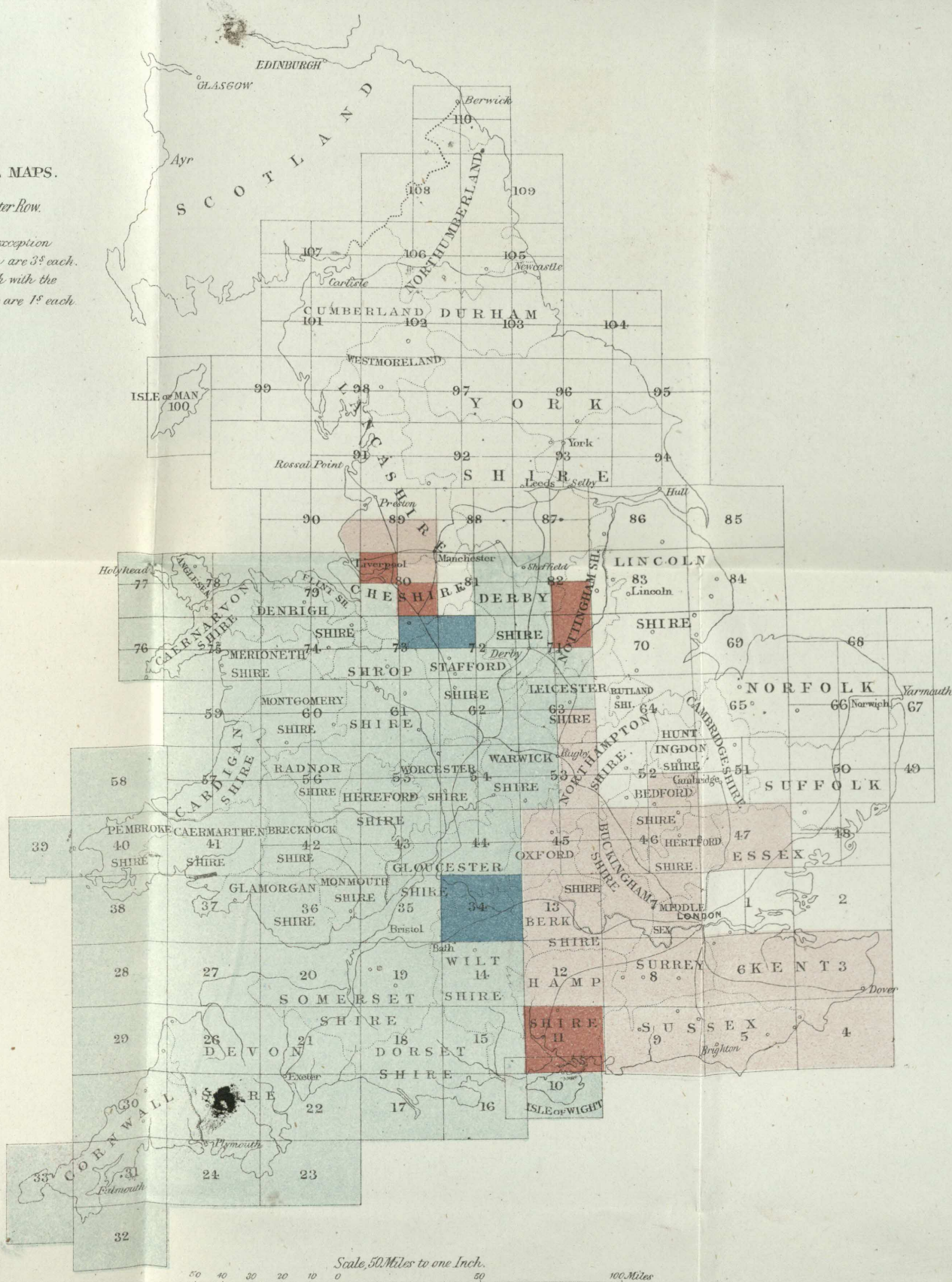
## GEOLOGICAL SURVEY OF GREAT BRITAIN, (ENGLAND AND WALES)

Published  
in Sheets on a Scale of one Inch to a Mile.  
Shewing the Progress to  
Dec<sup>r</sup> 31<sup>st</sup> 1857.

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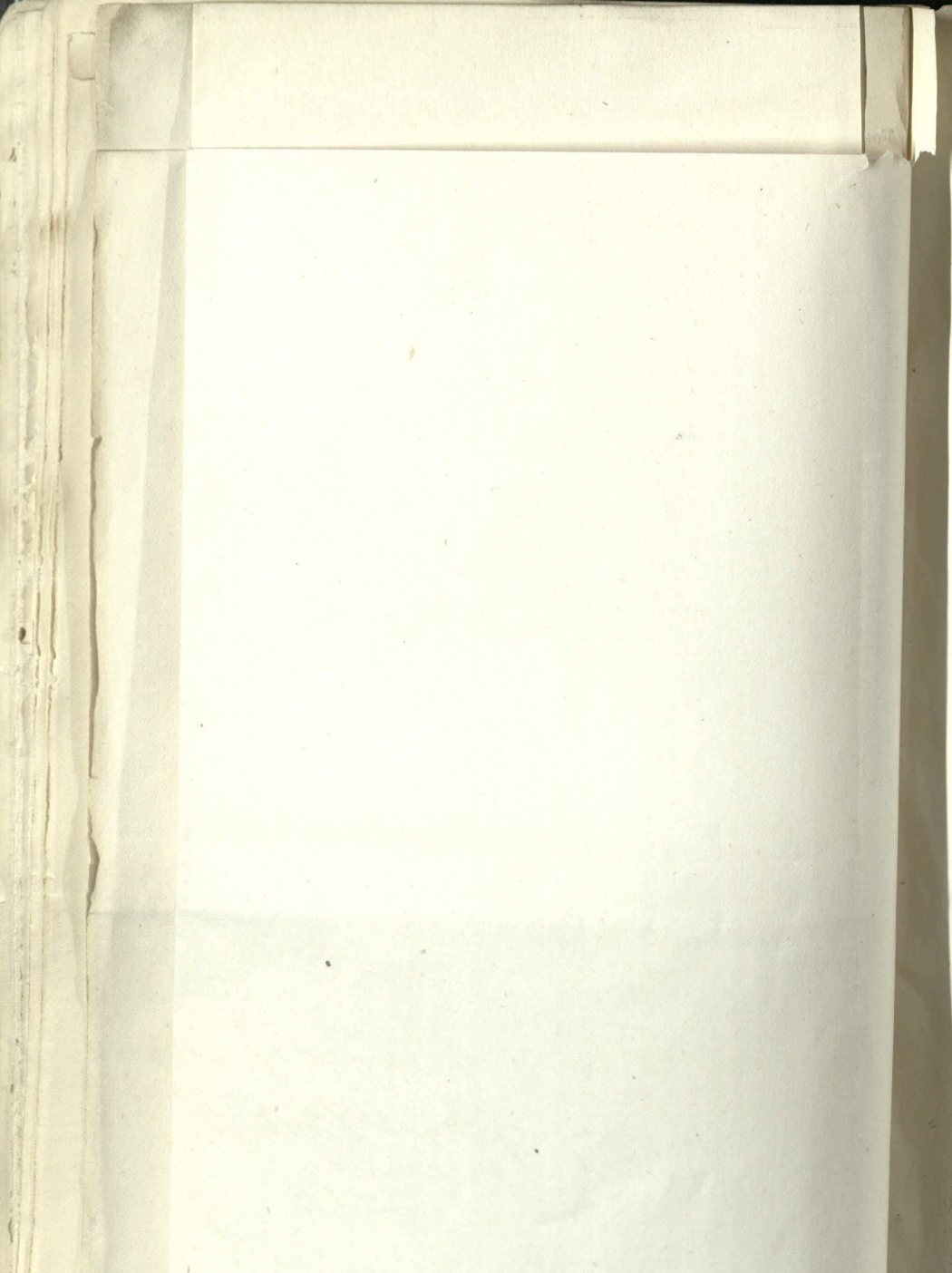
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Local Director of the Geological  
Survey of Great Britain







INDEX MAP  
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OF GREAT BRITAIN  
(SCOTLAND)

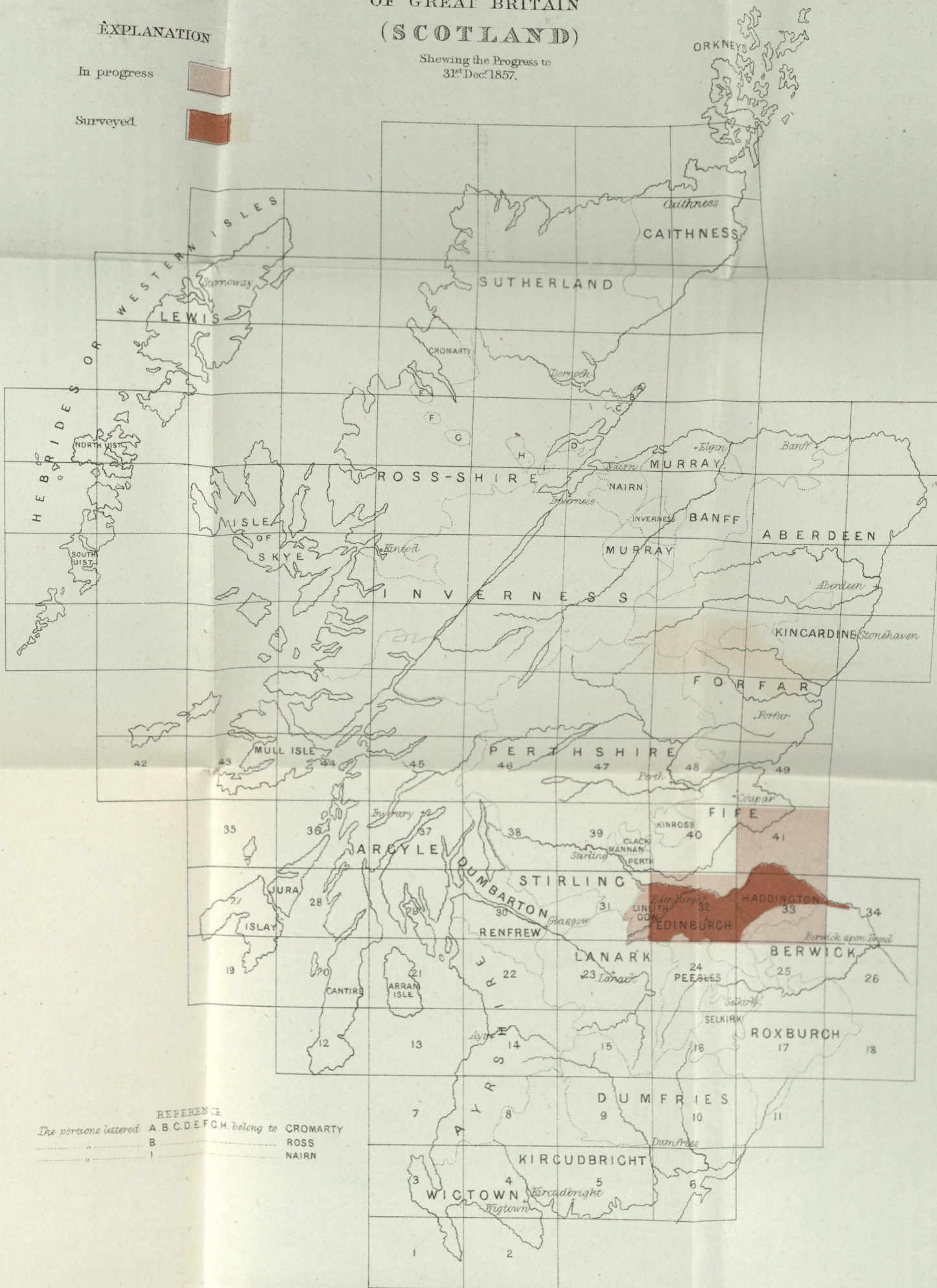
Shewing the Progress to  
31<sup>st</sup> Decr 1857.

EXPLANATION

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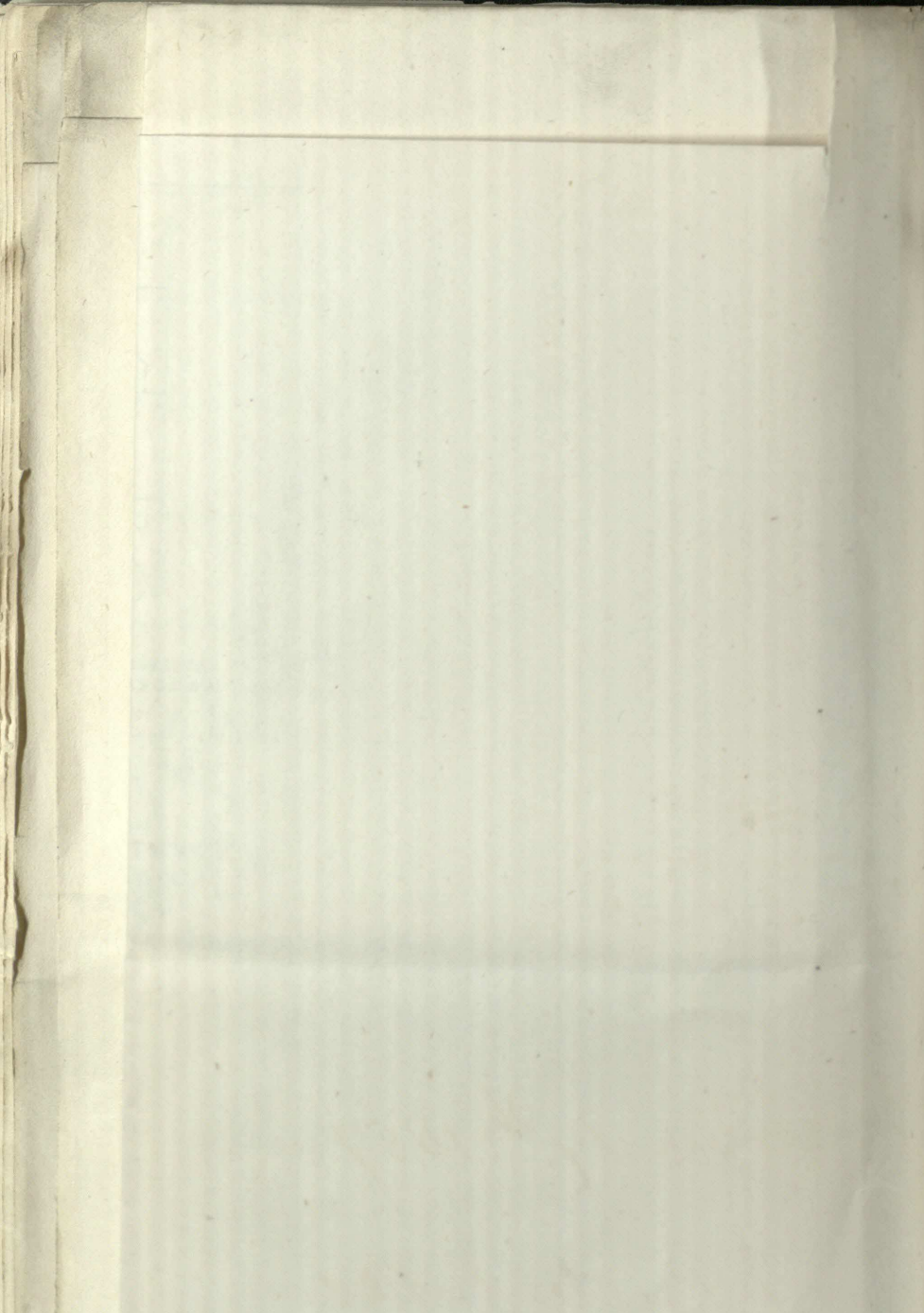
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CROMARTY  
ROSS  
NAIRN

Scale 32 Miles to One Inch

Day & Son Litho to the Queen

*And<sup>y</sup> Ramsay*  
*Local Director of the Geological*  
*Survey of Great Britain*  
*31<sup>st</sup> December 1857*







1857.

# INDEX (C)

State of the  
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to the close of the year 1857.

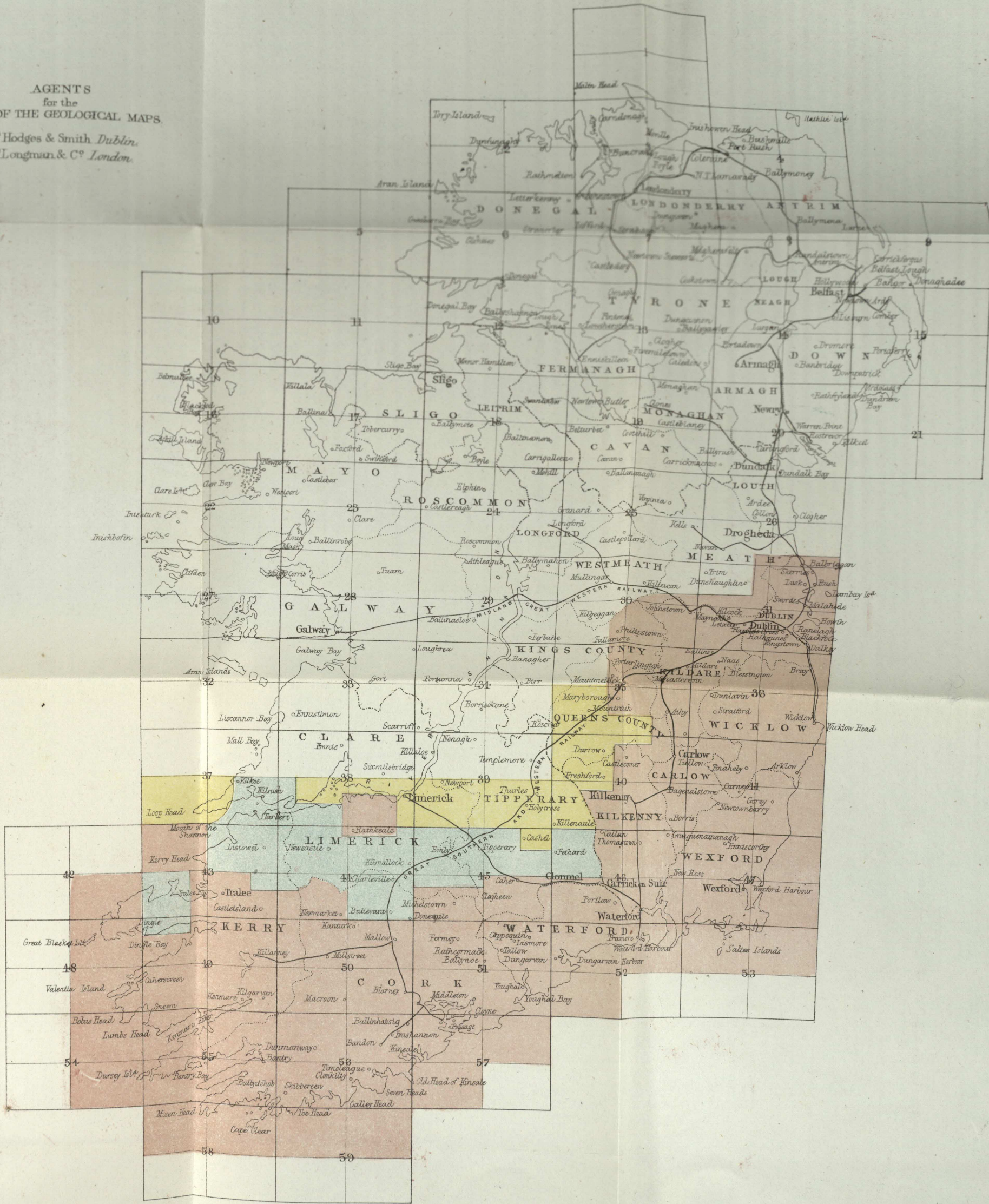
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Messrs Longman & Co, London.

## GEOLOGICAL SURVEY. Explanation.

Area completed previously to  
the year 1857.

Area completed during  
the year 1857.

Area in progress and intended  
to be next surveyed.

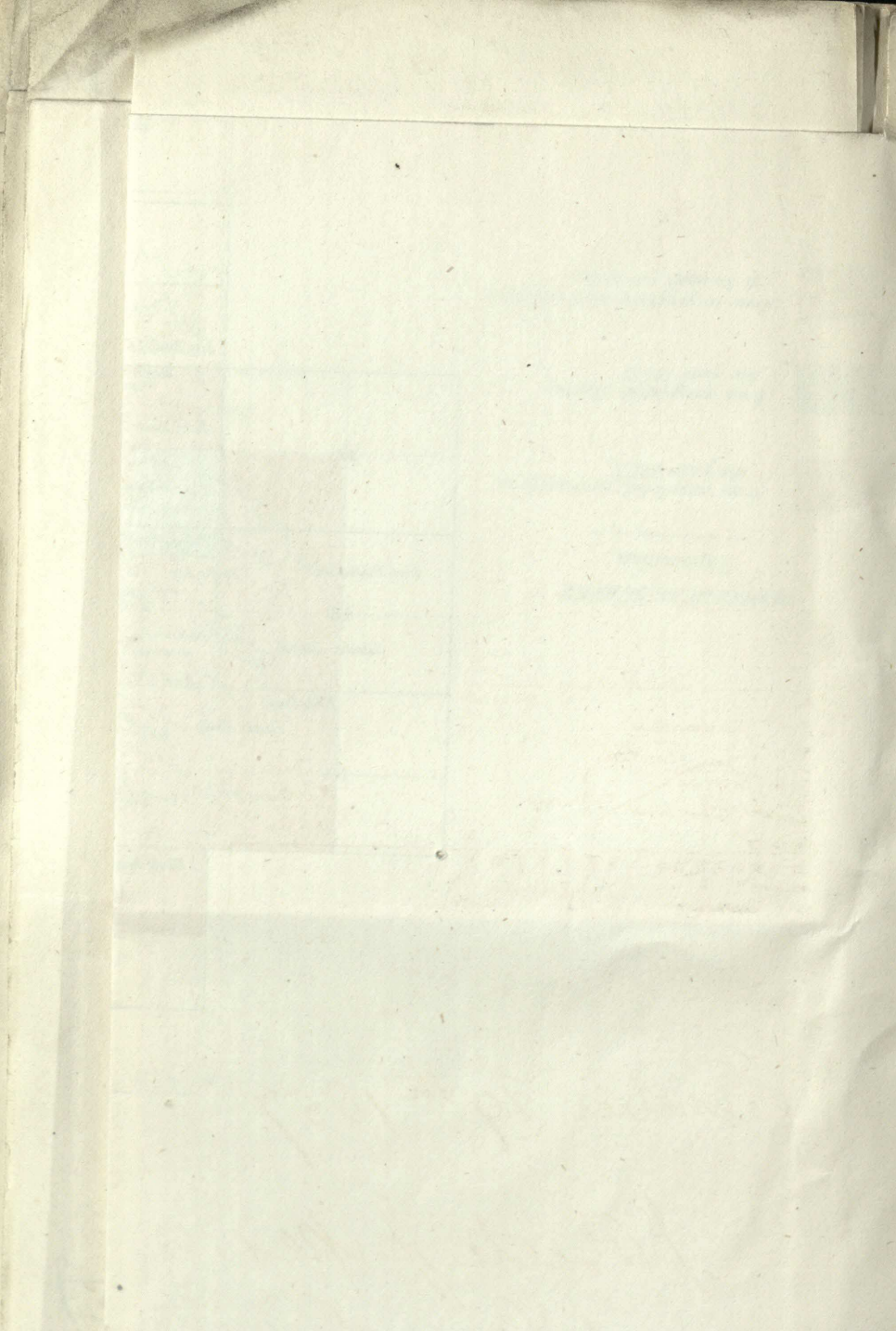


Scale 27 Miles to One Inch.

December 29<sup>th</sup> 1857

J. Beete Jones







1857.  
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 SALE OF THE GEOLOGICAL MAPS.  
 Messrs Hodges & Smith Dublin.  
 Messrs Longman & Co London.

**GEOLOGICAL SURVEY.**  
 Explanation.

Area published before 1857.

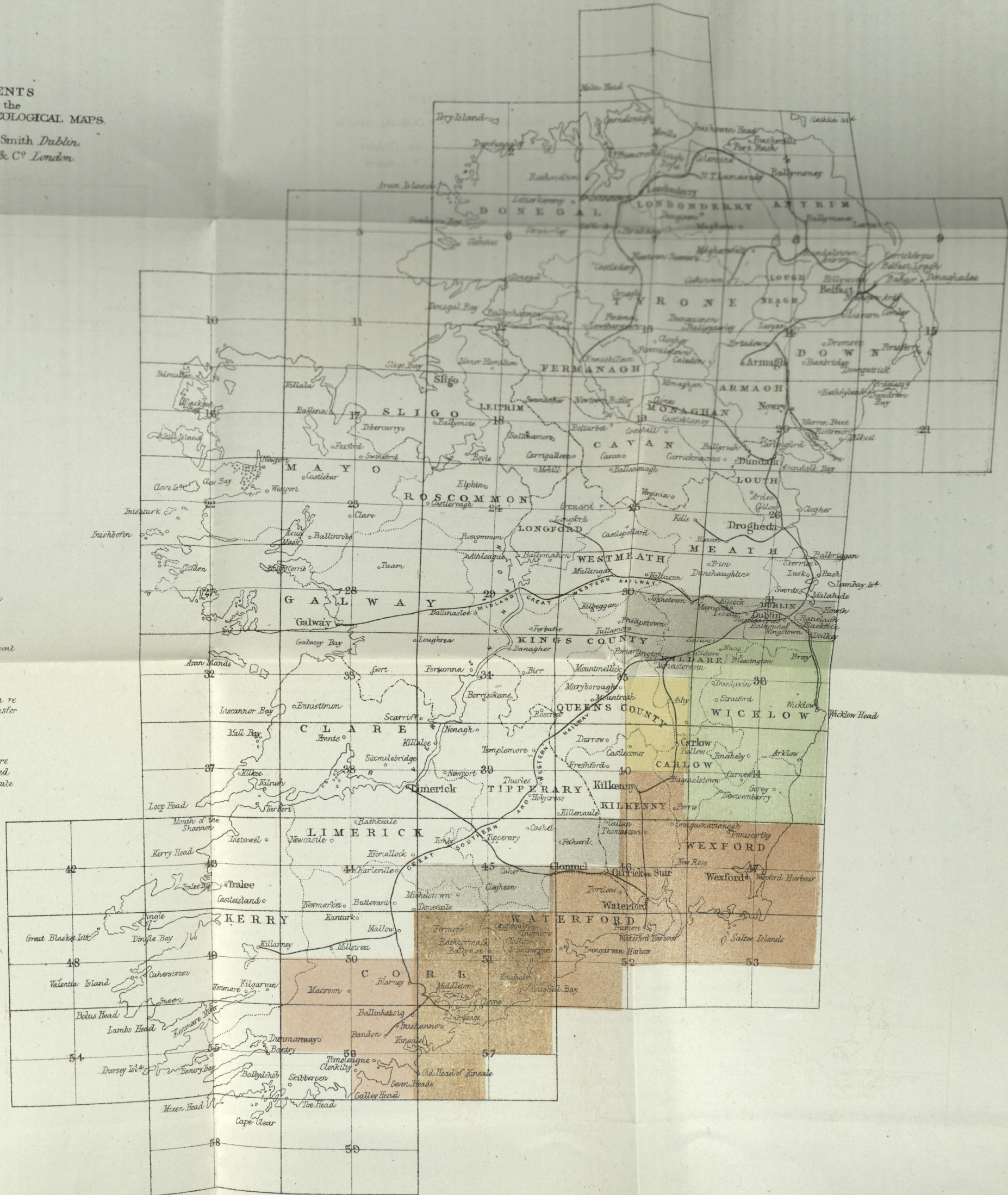
Area published during 1857.

Area in Colourer's hands for publication in January 1858.

Area of which Geological lines &c have been sent in for Engraving.

Area of which the one inch maps have been received and to which the work is being transferred from the six inch map.

Area of which the one inch maps have been received but of which the publication is delayed for the reception of Coal Crops and other minute and detailed work not yet completed.



Scale 27 Miles to One Inch.

December 29<sup>th</sup> 1857

J. Beete Jukes

Local Dissection



